Bonneagar Iompair Éireann
Transport Infrastructure Ireland

TII RESEARCH

RESEARCH PROJECT TITLE: ASSESSMENT AND MANAGEMENT OF FLOOD RISKS ON THE NATIONAL ROAD NETWORK

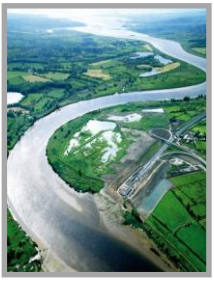
START DATE: **November 2011**	END DATE: **February 2013**

CONTRACTOR: JBA Consulting

RESEARCHER: Dr. Barry Hankin, Ross Bryant

PRIMARY SUPERVISOR: Ross Bryant

TII MENTOR: Dr. Vincent O'Malley



DESCRIPTION: Flooding of roads has the potential to cause a range of major difficulties, from harm to people, damage to vehicles, damage to the road infrastructure, isolation of communities and significant economic losses. The core objective of the research project is to define flood probability to the national road network, gain a more detailed understanding of which areas are at the highest risk of flooding, both now and in the future, and develop management techniques to mitigate the impacts of flooding.

OBJECTIVES:

The core objective of the study was underpinned by research questions that were designed to improve the way in which flood risk is communicated and managed. The research questions were re-visited throughout the project and include the following:

- How can we best model and represent flood hazard to roads?
- How can we best identify areas of greatest potential impact/risk?
- How can this information be best used to manage flooding and mitigate damage, disruption and harm to people?
- How best can we take into account the effects of climate change?

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BENEFITS: This project's deliverables demonstrate a practical approach to differentiate levels of flood risk, based on a range of modelling outputs and historic data. A wealth of flood risk information has been generated including new flood outlines for extreme surface water flooding and fluvial and coastal flooding. The use of high quality topographic data (LiDAR) owned by TII and the rapid, accurate, overland flood routing model, JFLOW+, has led to detailed hazard maps including predicted flood depth, velocity and hazard data. The impact of predicted flooding on the road system and users has been summarised over grid squares to help prioritise areas for flood risk management. This has led to a new way of displaying flood hazard as a linear metric along 100m segments of the carriageway.

RESEARCH FINDINGS:

The core objective and research questions have been used to define the scope of the study and specify the following deliverables:

- Historic (point data) and predictive (existing and future) flood mapping Geographic Information System (GIS) data for the following sources of flooding:
  - Fluvial, coastal (extent only)
  - Pluvial (extent, depth, velocity and hazard)
- A strategic flood risk metric analysis and tool to identify the areas potentially at greatest risk from flooding at national level
- 6,601 GeoPDF interactive flood risk maps covering the entire National Road Network
- A Flood Risk Management Protocol to interpret risk data and manage risk at the site level

CONTACT DETAILS

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